STAT [redacted]

THIRD MONTHLY NARRATIVE REPORT

15 October 1964

REFERENCE

STAT [redacted]

REPORTING INTERVAL

10 September 1964 - 10 October 1964

OBJECTIVE

The objective of this program is the design, construction, and testing of a prenormalizing system to be used for problems of automatic target identification on aerial imagery. The prenormalizer will scan the image and, by special filtering techniques, produce a set of measurements which have minimal change with translation and rotation of the specific image on the scene. Testing is to be accomplished on the CONFLEX I Adaptive Recognition System.

STATUS OF ACTIVITIES AND ACCOMPLISHMENTS

Analyses

Additional information on the character of the spectra of simple imagery is being obtained from computer simulations, and a continued search is being made for the mathematical forms which aid in the understanding of the prenormalization process. Currently, calculations are being made which test

one form of image synthesis. In this synthesis, the two-dimensional delta function is being approximated by a zero-ordered Bessel Function of the first kind. This density function is obtained from a simple superposition of two-dimensional plane waves. It is hoped that from this study a better concept of prenormalizing variables can be gained.

THE PRENORMALIZING SYSTEM

The Scanning System

Most of the drawings and sketches needed for fabrication have been completed during this interval. Several existing manufacturing techniques that might be used in fabricating the sample slit cylinder have been investigated and evaluated to insure that a practical, yet economical, technique will be used. The cabinet and optical components needed for the scanner have been selected and are currently being ordered by our purchasing department. Also, the video circuitry, which will amplify and provide AGC for the photo-multiplier signals, has been successfully breadboarded.

The Filter Bank and Interface with CONFLEX I

During this interval, the electrical design of the 400 circular analysis channels has been finished, and the parts for these channels have been placed on order. In addition, the gating hardware, which will couple the 400 analog voltages obtained from the circular analysis to the CONFLEX I System, has been laid out. These parts are on order. Complete layouts for the circuits have been supplied to our wire shop so that construction and assembly can take place as the parts arrive.

TIME SPENT ON PROJECT (CUMULATIVE TOTAL)

STAT [redacted] 65 Hours

203 Hours

TECHNICAL AGREEMENTS MADE

None

DIFFICULTIES ENCOUNTERED

None

PROGRAM FOR THE NEXT INTERVAL

The fabrication of scanner parts should be well under way in the next interval. The assembly and wiring of the filter and gating circuitry, which constitute the bulk of the electronics required, will proceed upon our receipt of electronic parts. Parts required for the readout matrix of 400 lamps will be ordered early in the next interval. Also, the final choice of preliminary filter design will be made, and the parts will be placed on order. As time permits, further analysis of the prenormalizing system will be carried out.

SUBMITTED [redacted] STAT

Project Engineer

Vice President,
Engineering